

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method of ~~kinematics~~ mechanical simulation using polygonal shape data in which at least a portion of a shape is approximated by a combination of a plurality of polygons, the method comprising:

obtaining shape data of analytic surface expression by fitting partial sets of the polygons to analytic surfaces, wherein the analytic surfaces include at least one of a cone, torus, and cylinder;

generating an assembly model based on ~~defining~~ a pair relationship including a coaxial relationship between the analytic surfaces, the assembly model expressing a positional relationship among a plurality of components thereof, and the positional relationship corresponding to the pair relationship; and

performing a ~~mechanical~~ kinematics simulation by computing positions of the components according to the positional relationship.

2. (Original) The method according to claim 1, further comprising:

selecting at least one or more polygons from the polygonal shape data in accordance with a predetermined selection criterion; and

determining an analytic surface to be assigned for the one or more polygons.

3. (Canceled).

4. (Canceled).

5. (Currently Amended) A ~~kinematics~~ mechanical simulation apparatus using polygonal shape data in which at least a portion of a shape is approximated by a combination of a plurality of polygons, the apparatus comprising:

a data acquisition unit configured to obtain a shape data of analytic surface expression by fitting partial sets of the polygons to analytic surfaces, wherein the analytic surfaces include at least one of a cone, torus, and cylinder;

an assembly modeling unit configured to generate an assembly model based on ~~defining~~ a pair relationship including a coaxial relationship between the analytic surfaces, the assembly model expressing a positional relationship among a plurality of components thereof, and the positional relationship corresponding to the pair relationship; and

a ~~mechanical~~ kinematics simulation unit configured to perform a ~~mechanical~~ kinematics simulation by computing positions of the components according to the positional relationship.

6. (Original) The apparatus according to claim 5, further comprising:

a selection unit configured to select at least one or more polygons from the polygonal shape data in accordance with a predetermined selection criterion; and

a determination unit configured to determine an analytic surface to be assigned for the one or more polygons.

7. (Currently Amended) The ~~method~~ apparatus according to claim 5, further comprising:

a first calculation unit configured to calculate a first representation of a first analytic surface of a first component;

a second calculation unit configured to calculate a second representation of a second analytic surface of a second component; and

an interference check unit configured to check the presence/absence of geometric interference between the first component and the second component, according to the ~~[[a]]~~ first representation and the second representation.

8. (Currently Amended) The ~~method~~ apparatus according to claim 7, wherein the first representation includes a central axis of the first component and the second representation includes a central axis of the second component.

9. (Canceled).